THE VETERINARY RECORD

A Weekly Journal for the Profession.

Edited by WILLIAM HUNTING, F.R.C.V.S.

No. 820. MARCH 26. 1904. VOL. XVI

FRACTURE OF DISEASED BONES.

As an illustration of what may happen to those attending human patients, and also to those attending dogs, we reprint the following newspaper paragraph.

TALE OF A BROKEN LEG.

Serious accusations were made against a nurse at West Ham Infirmary by the relatives of Mrs. Maria Ann Westbury, aged forty-eight, of East Ham, whose death was inquired into.

The husband said his wife visited the Infirmary suffering from paralysis in the leg, and when he visited her she told him that a nurse had been pulling her leg about, and that she heard it "click" and screamed out. She stated afterwards that it was set and reset.

A sister of Mrs. Westbury also said that she cried pitifully, and complained that they had broken her leg after putting a screen round the bed.

These charges were emphatically denied by two nurses, and Dr. Christina Goode, assistant medical officer, said that death was due to syncope following cancer. It was cancer of the bone that caused a spontaneous fracture. Muscular action or slight violence might cause it. There was partial paralysis of both legs.

The jury returned a verdict according to the medical evidence.

Now cancer of bone occurs in dogs, and generally affects either the humerus or femur. Both these bones are well covered with muscle, and until enlargement is distinctly felt a diagnosis of rheumatism may be made. The enlargement of the bone is soon followed by fracture, which may occur as the result of jumping from a chair or a step, or may happen in a struggle when the dog is being held for examination. In one case of this kind the butler who was left in charge of the lame dog was nearly dismissed, and would always have remained under suspicion save for the report of a post-mortem examination. In another case two practitioners were concerned; the first treated for rheumatism but made no progress towards cure. Then the dog was sent home, and shortly afterwards fracture occurred spontaneously. The patient was then taken to a second practitioner who discovered the fracture, and imprudently reflected on the previous diagnosis of rheumatism.

The warning to be drawn from such cases is—not to forget the probability of osteo-sarcoma when lameness exists for some time, and any enlargement of humerus or femur slowly makes its appearance. And also—when you find a fracture of these bones and hear a history of another practitioner having treated the case for some weeks, don't presume the fracture existed during the time of his attendance.

Of course a post-mortem examination would always clear up the case, but unfortunately people go to law about animals without this necessary preliminary.

EPIZOOTIC LYMPHANGITIS.

By Lieut. A. S. HEAD, A.V.D., Soudan.

This disease, although newly imported to England from South Africa, has been known under various names for some years in Egypt, India, Italy, and other countries.

It was taken to South Africa during the war, probably by mules from Italy, and spread there to an alarming extent among Government animals.

The reason for the rapid and wholesale spread of this disease in Africa I attribute to the fact that the horses and mules were kept, at the Remount and other depôts, in kraals built with barb wire and nearly all these animals received a scratch or a wound from it which became infected, or they got rope galls from being tied up on ground lines. I believe that in all cases the disease starts by the infection of a wound, however slight, with this micro-organism.

The first case I had in South Africa was a chestnut gelding which I had been treating previously for a wound at the elbow. About six weeks after the wound had healed and the horse had returned to work it was brought to me suffering from epizoötic lymphangitis at the seat of the old wound.

Another case was a bay gelding which had been brushing badly behind, the fetlock, and later, (from spreading up the lymphatics) the hock became infected with epizoötic lymphangitis.

In nearly all cases, and I at one time had charge of over 100 epizoötic lymphangitis patients, an old scar on or below the seat of the disease could be found to account for the point of infection.

The Symptoms.—The first noticeable symptom is a little, hard, painful lump, or lumps, along the lymphatics; these form abscesses and discharge a thick white or yellow pus, which when examined under the microscope with 1-6 power without being stained, shows thousands of small, oval, double contoured bodies, smaller than red blood corpuscles, called cryptococci.

The chief seats of the disease are the limbs, due probably to the fact that wounds are more common there, and more apt to become infected through

dirt. Next to the limbs I think the neck is most often affected. The head is sometimes infected through rubbing or biting an epizoötic lymphangitis sore on some other part of the body.

Diagnosis.—Although this disease closely resembles farcy, the diagnosis is quite easy by examining some pus under the microscope. Also by its negative reaction to mallein. I believe it is always wise to test the animal with mallein, as I have often found the two diseases existing together.

The Treatment.—This is not altogether satisfactory, although the majority of cases can be cured, for the keep of the animal during this time often exceeds its value when cured.

The success of the treatment depends almost entirely on the thoroughness with which it is carried out. First open up every abscess thoroughly, and the channels connecting abscesses, and cauterise with pure carbolic acid or pulv. arsenic. Dress the wound daily with tr. iodine, and smear over it sulphur and oil to keep the flies off, and so prevent them being carriers of the disease. If the channel between two abscesses is too long to be slit open, force tr. of iodine through it daily with a quittor syringe.

The part must be carefully examined every day to look for signs of the disease spreading up the lymphatics, and if it shows any sign of doing so the part should be at once opened up and cauterised.

The patient should be kept on soft food and given 10 grs. of bin-iod. hyd. powdered on the tongue daily, starting at 3 grs. and increasing the dose gradually up to ten grs. Hyd. biniod. has no ill effect on the tongue or digestive tract of an animal when given this way. I have given it continually without affecting the animal's health. I should prefer to use pot. iod., but the expense is a consideration in long cases.

As the period of incubation is from two to six months, so in an apparently cured case, unless every germ has been killed, the one that is left behind may start the disease again in two months or more. This has to be taken into consideration when one is considering the advisableness of attempting a cure. The usual length of time it takes to cure a case is six weeks to three months, depending a good deal upon the thoroughness of the treatment.

There is no doubt that a change of air to a higher district helps the case. I have every reason to believe that the disease is transmittable to man.

SPASM OF THE *LEVATOR HUMERI.*

In a number of cases of lameness of the fore limbs I have noticed spasm of the levator humeri muscle on the affected side. Some of these cases have recovered, and therefore only a guess can be made at their exact nature. Some have disclosed definite lesions on post-mortem examination, but the other symptoms shown in the various cases have not been alike—in fact, so different that I cannot believe similar lesions existed.

In one case a railway van horse was brought home in a float and seemed to have suffered some injury to the point of the shoulder, but no trustworthy history could be obtained of any accident. Seen a few days after being brought home, there was nothing noticeable whilst the horse stood quietly in his box. When moved out he seemed "stiff in front" and after going a few yards the near fore limb was jerked upwards and forwards with the knee fully extended. Then it was noticed that the levator humeri was spasmodically contracted and remained hard and tense all the way up the side of the neck for some time after the leg had become normal in position. Grasping the muscle in the hand would at once cause a spasmodic contraction throughout its whole bulk. Rest and warm fomentation to the shoulder resulted in recovery in about three weeks.

A quite recent case in which I again met this condition was in a horse showing cerebral symptoms. Some irregular movements were first shown at work, and then the horse took to walking round his box always in one direction—to the left. If he stopped in a corner he would lean his head against the wall and stand still.

On the second or third day of these symptoms when he was started on his round the near fore limb was jerked up like a case of stringhalt, and the levator humeri was contracted so that it stood out hard and rigid. No injury to the shoulder could be traced, and a post-mortem only showed small gritty masses in the lateral ventricles of the brain.

The first case in which spasm of this muscle attracted my attention was a horse that had run into a wall with a heavy load behind him. The head could be raised slowly without any trouble, but when it was depressed and the nose pressed in the direction of the sternum signs of pain at once appeared and the horse ran back. A post-mortem showed injury to the bodies of the 5th and 6th cervical vertebræ and disorganisation of their intervertebral discs. The slightest movement of this horse was followed at once by spasmodic contraction of the levator humeri.

In another case where great lameness existed, where the foot sustained no weight and where there was the greatest difficulty in—I might almost say incapacity for—getting the limb forward, this spasm of the levator humeri was most marked. A post-mortem examination disclosed necrosis of the body of the 7th cervical, and fracture of the first rib close to the sternum.

Is the spasm in these cases merely the result of pain and an attempt to fix the shoulder as much as possible, or can it be due to direct injury to a nerve?

In the cases of cervical injury the spasm is probably an attempt to prevent pain when the neck is moved—an attempt to limit motion and so prevent pain.

Doubtless the symptom has been noticed by other practitioners, and it would be interesting to hear from them under what circumstances, especially if the case ended in a post-mortem.

W. HUNTING.

ABSTRACTS FROM FOREIGN JOURNALS.

Hæmolysin, Cytotoxin, and Præzipitin.

Hæmolysin.—Belfanti and Carbone were the first who discovered from experiments that the serum of horses previously injected with the red blood corpuscles of rabbits, if again subcutaneously injected into rabbits killed them. This peculiarity only occurred with horses treated with rabbits' blood, whilst the serum of other horses used on the experimental animals was tolerated. They could also prove that the rabbit showed destruction of the red blood corpuscles, and that this destruction of the red blood corpuscles was the cause of death. It remained, however, for Bordet to make closer investigation into the mechanisms of this peculiar biological proceeding.

Bordet could prove that the blood serum of a species of animal A, which was treated with the red blood corpuscles of the species of animal B, had the power to dissolve the red corpuscles of the species B, as well in the living animal as in the reacting glass. He further succeeded in proving that this power of dissolving the red blood corpuscles possessed by the serum was solely limited to the red blood corpuscles, and that this action of the serum was quite specific.

Bordet also found that two different substances took part in the production of this specific effect. He found that as soon as the specific serum obtained was heated to 55° it lost its activity. This he designated inactivity of the serum. He added normal serum to this inactive serum and found that by this the serum regained its activity. As a result of this he put forward the hypothesis:—In serum there are two substances, a permanent warm specific substance, the substance sensibilatrice, sinking at a heat of 55° as alexin according to Buchner. The substance sensibilatrice prepares to a certain extent the red blood corpuscle, it sensibilises it, makes it sensitive, and the alexin acts as a ferment on this prepared blood corpuscle and dissolves it. Similar processes are described in the experiments of R. Pfeiffer. He took cholera vibriones, mixed them with cholera-immune serum obtained from goats and introduced this mixture into the peritoneal cavity of guinea-pigs. After a short time he found the bacteria dissolved. This experiment was described as Pfeiffer's phenomenon.

Ehrlich and Morgenrot found that two substances are present, a permanent warm substance called by Bordet "substance sensibilatrice," by Ehrlich "ambozeptor" or "immune bodies," and by Metschnikoff designated "fixator."

Ehrlich also succeeded by an ingenious experiment to isolate the immune bodies bound to the red blood corpuscles by means of centrifugalisation. The second substance Ehrlich described as "complement." The occurrence of hœmolysin is also as follows: By the previous treatment of an animal, species A, with the blood of an animal, species B, the specific immune body arises in animal species A. This only is specific, the alexin is not specific, it follows from this that one can make an inactive serum again active by means of another serum.

Cytotoxin.—Metschnikoff injected into animals an emulsion of bone marrow and found that the serum of animals treated in this manner possessed the peculiarity of killing white blood corpuscles. He called the matter that brought this about leucotoxin. Landsteiner and Moxter made similar trials. Lindemann injected into animals an emulsion of kidney epithelium, and obtained by this a serum which when injected into animals destroyed the epithelium of the kidneys. He called this nephrolysin. Other experimenters took spermatozoa and obtained a spermatotoxin therefrom.

Recently Jensen, of Copenhagen, and of Leyden and Blennenthal, of Berlin, injected into animals an emulsion of cancer cells and obtained from these animals a serum which, injected into cancerous growths of men and animals, causes their decomposition.

There is hope that in this way a useful curative remedy against carcinoma may be obtained from cytotoxin.

Praezipitin.—Bordet injected cow's milk into animals and found that the serum of these animals decreased the casein of cow's milk.

Wassermann and Schütze then noticed that this serum had a specific reaction and that the serum of animals treated previously with asses' milk only produced a precipitate in asses milk and not in cow's milk or other milk.

Uhlenhuth has now used men's blood on animals and the serum therefrom has been used to test men's blood; and not only men's blood but that of many other species.

Jess has adopted this means as a pioneer in the examination of meat, as a control as to its nourishing value.

The technique is as follows: Serum of horses blood, albumen of horse muscle, or the juice of pressed horse muscle is injected into the peritoneal cavity of rabbits. The quantity used is about 10 g.; after two days again 10 g., and so on nine or ten times. Then the animal is slaughtered and the serum obtained. From the suspected meat or sausage an extract is produced with physiological salt solution (0·8 per cent.), and this is filtered till it is perfectly clear. If one now adds to a solution of horse albumen a small quantity of the specific serum (1 : 100, 1 : 1000, and so on) according to the atomicity of the serum a turbidity occurs immediately or after a few minutes, and a precitate forms, and especially if the serum is derived from animals previously treated with horse albumen and is used entirely in the presence of horseflesh.

The conclusions of Jess are confirmed by further work in this department.—(Ex. *Kompendium der Bacteriology und Blutserum-therapie*, by Dr. Paul Jess, of Charlottenburg.

G. M.

CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting was held at 10 Red Lion Square, Holborn, W.C., on Thursday, March 3rd, 1904, at 7 p.m. Mr. R. Porch, president in the chair. There were present Messrs. A. L. Butters, J. Rowe, R. Butler, G. Upton, G. Sutton, W. Hunting, H. A. MacCormack, F. O. L. Walpole, L. Savournin, P. S. Howard, W. E. Murts, C. W. W. Brown, H. King, E. Lionel Stroud (hon. sec.), and as visitors Dr. H. Uchimura, Veterinary-Captain, Imperial Japanese Army, and Mr. T. Green.

On the motion of Mr. MacCormack, seconded by Mr. Howard, the minutes of the last meeting were taken as read and confirmed.

The HON. SEC. (Mr. E. Lionel Stroud) announced the receipt of a letter tendering his resignation from Mr. J. Hall Brown, and on the motion of Mr. Butters it was accepted with regret.

MORBID SPECIMENS.

Mr. HOWARD produced a molar tooth from a mouth known as a "shear-mouth." He had not seen the horse during life, but he saw the jaw in the slaughter-house. Being unable to get the jaw, he took the most typical tooth he could.

Mr. HOWARD also produced the acetabulum of a horse. The horse was harnessed, and it ran away, and came into collision with a heavy piece of ironwork. The speaker saw the accident that brought the animal to the ground. It got up on three legs and galloped away about a hundred yards. The injured leg was swinging with a circumductory kind of movement, but very loosely. The horse was got into a stable a few yards off, and died in ten minutes after the accident had taken place. He had made a post-mortem and found that death had taken place from internal hæmorrhage. The region round the obturator foramen in the pelvis, the seat of the hæmorrhage, was very much saturated with blood and clots. The acetabulum was broken away from the rest of the pelvis, just as he showed it, and where it was detached from the rest of the pelvis the bone was in a pulverised state. Not only that, but it would be noticed that the edge of the cavity was broken right away.

Replying to Mr. Butters, Mr. Howard said he should think the molar tooth produced was from the lower jaw, from the angle that the fang made with the crown of the tooth it probably would be. The whole row of teeth were in a similar condition, all the teeth were much narrower than normal, from side to side, and the whole of the teeth showed the shear condition—the exaggerated slope.

Mr. ROWE thought that probably a back tooth and a double one had become fused in birth. He had hoped to have brought a specimen from a parrot mouth. Examining the mouth, the front molar projected over and reached from the anterior part of the lower jaw and gradually pressed the mouth so that it could not be shut. It was taken with paralysis, and with an ordinary farrier's chisel he (the speaker) knocked off the front of the teeth, and when the animal was put into slings and destroyed the same night, Mr. Rowe went to the knacker to try and get an examination of the skull, but he was sorry to say it was already gone.

NOMINATIONS FOR FELLOWSHIP.

The CHAIRMAN announced the following nominations for Fellowship, which would come up for election at the next meeting:

Mr. E. A. BATT, proposed by Mr. Guy Sutton and Mr. Hunting.

Mr. T. S. GREEN, proposed by Mr. Guy Sutton and Mr. Hunting.

VETERINARY SURGEONS FEES.

Mr. UPTON said he should like to bring before the meeting the question of fees paid to Veterinary Inspectors at Agricultural shows for giving certificates of soundness. It appeared from the rules that they gave certificates of soundness for 5s. He did not consider that a sufficient fee. It it were pointed out from their Society that they considered the fee inadequate, something might be done. He thought it ought to be at least £1 1s. Replying to Mr. Butters, Mr. Upton said he did not know if it was done in the case of the Hackney horses and Thoroughbreds, but it was in the case of the Shire Horse Society.

Mr. HUNTING asked if they examined all the horses or only those sent to the judges as possible prize horses. Was Mr. Upton sure it was not for "highly commended" or something of that sort? because there would not be so much objection to it. Possibly they only gave certificates when a man wanted a certificate and he gave 5s. for it.

The CHAIRMAN assumed that Mr. Upton was complaining because the owners of these horses had certificates for 5s. which they could show to anyone all over the country, *i.e.* the horses were examined by these veterinary surgeons and passed as sound, and Mr. Upton probably objected to that.

Mr. HUNTING said he wanted to know whether this certificate might not be looked upon as something in the light of a prize. (Mr. Upton: No, they must pay for the certificate.) He supposed they were only confined to "highly commended" and prize horses.

Mr. WALPOLE thought he was right in saying that animals were first selected by the judges, and were then sent out into the veterinary yard for examination. If those animals were passed "sound" he believed they had a little counterfoil with either "yes" or "no" on it, and they went back into the ring. Probably Mr. Upton was referring to animals that were entered for sale at the end of the show, and he (the speaker) believed something was done in the way suggested—that certificates were given. He believed exhibitors could obtain these certificates from the Secretary on payment of a fee. That was in order that some certificate might be produced at the time of sale. The Veterinary Inspectors were paid a fee for examining horses by the Society, not by the exhibitors. He was at the show himself, and heard the auctioneer call out a large number of certificates signed by Mr. Forshaw, whose father was a great man in the Shire horse district, and he did not think he would have examined a horse for 5s.; he would probably not have done so under a guinea. A great many certificates were signed by the senior Inspector for this particular show. He believed the Veterinary Inspector was allowed by the Society to examine horses prior to their being admitted to the hall. He went all over the country and did it. He (the speaker) had no doubt that good fees were paid for it; certainly Mr. Forshaw did not go to the North of England for 5s.

Mr. HOWARD doubted whether the certificate was actually granted for 5s. only. It would probably be that the owner of the horse would have to pay certain fees before he paid that 5s. He would probably have to be a member of the Society in order to show in the first instance, and after that he would have to pay a fee of perhaps two guineas to have his horse in the show at all.

The HON. SEC. said the fee was charged by the society running the show. They did not get a certificate signed by the veterinary surgeons in attendance. The horses must have been entered in their respective classes. It was not his experience at the Hunter's show, they did not issue a single certificate while he was there. Any certificates were either given by the secretary or by somebody in authority. These different shows could charge what they liked.

After some further discussion, Mr. Upton promised to give notice of motion for the next meeting, and if he could not be there the Secretary promised to bring it forward.

"THE AGE AND STANDING OF DISEASE."

(Adjourned Discussion on Mr. HUNTING's Paper.)

The CHAIRMAN said Prof. Macqueen should have been there to open the discussion, as he was the proposer of the adjournment. Unfortunately he was not, but as Mr. Butters was the seconder he would ask him to take his place.

Mr. BUTEERS said that as Professor Macqueen proposed the adjournment, he had formally seconded it, but as he had already spoken on the subject he had not anticipated saying much more. It was a very wide subject. As he had said before, it might be amplified into book form. Not only matters relating to the external conditions of the animal but also post-mortem and pathological conditions—these were equally important to those which they saw in examining the animal externally. He would like to touch on one point with regard to navicular disease. Mr. Hunting took an animal which was lame at the time of diagnosis and suffering from navicular disease. By what means would he be able to say how long the disease had existed in that animal, unless a post-mortem examination was made? From his (Mr. Butters') own observation he had come to the conclusion that disease changes had taken place in the navicular bone and bursa, and yet the animal was sufficiently sound to keep at work, and as far as he knew it was a matter of impossibility to give any opinion as to how long the animal had been suffering from lameness. When Mr. Hunting mentioned contracted feet, did he mean one contracted portion or both feet contracted alike? He (the speaker) had seen animals in which the feet were said to be contracted, *i.e.* the size of the feet did not appear in proportion to the size of the limb or the size of the horse. The foot appeared small, and yet these animals were not only free from lameness but had been free from lameness for a great number of years. They might get some experience of a disease going further, either a stiff knee, a big elbow, or something else. But where they had two feet the same size, using the term "feet" made one wonder whether "contracted foot" would be the same thing. He might say that he did not think that a paper or even a book on the subject could be written by one man from his own observation. He must depend very largely upon the observations of others. And the first object of veterinary surgeons in their usual attendance upon cases—at least the object of the client—was to find out "how soon will this horse be working again?"

Mr. UPTON thought that in the discussion they would have to go a little beyond the real limit of the paper, because as regards the age of disease, it was uncertain, and as regards its duration he thought that was like prophesying when the world was coming to an end. He did not believe that when a man had studied and looked at his different cases he could always come to a definite opinion. He thought it all depended on the constitution. He had had something to do with stud farms, and when he had horses say two or three years old, and saw their weak points, he could see to a certain extent it was bred in the animal. One might think the animal was going on all right, but suddenly something came, and they found there was the weak point—there was something that the animal's parents suffered from. He would like to know what roaring exactly was. He remembered when he was at College, at the time of the craze for the Fleming operation, for the removal of the cartilages of the larynx, he expressed the opinion that the removal of the cartilage would not be satisfactory. He did not believe that roaring in the first instance was due, or was seated in the larynx, but that in the majority of cases it was seated in the lungs themselves. He thought it had something to do with the calibre or the volume of air passing into the lungs. He believed that in the majority of cases, if it was pointed out, they would find that the larynx was secondarily affected. Of course they might get a horse out of condition, and as soon as they began to do the animal up the chances were that if it had any imperfections they would find them out. As to shivering, he differed from Mr. Hunting. If they went back to the old writers they would find that they dated back shivering to castration or some injury to the back when the horse had slipped up. He never liked to differ from the old ideas, because he had found a lot of good advice given by the old practitioners, but in the case of shivering he must say that he did not agree with them. In his opinion the majority of cases of shivering were due to injury—ankylosis of the spine. Where they got a catch and they saw nothing about the spine, he thought it was hereditary, but that some such disease as influenza or strangles, or some specific fever, had been the exciting cause. Small cataracts were as a rule, he thought, the result of some injury, and the cataract that involved the entire eye usually constitutional. As to contracted feet, he looked upon that trouble as dating back from the time when the horse was first shod. He often said to young men that had to deal with foals "You cannot make iron expand like the natural foot." As soon as they shod a foot they had limited the expansion. He did not mean to say that with horses that were very weak at the heels, and low and flat, they would get the amount of contraction in the foot that they would see in a perfectly healthy foot. But if they examined a horse's foot after it had been shod for three months they would find that the heels did and must come in, according to the law of nature. They would have put iron to expand where the natural horn was, and the consequence would be contracted feet. He thought it would require a post-mortem to say what injury had been done. That was the drawback of shoeing. He had proved it with all sorts of shoes. With regard to splints, he would look upon the man as being guilty of manslaughter who passed an animal for hunting purposes that had a splint below the knee and with close action; this splint was the result of the gradual moving of the limbs. He believed they could safely say that that splint dated from the time when the animal was first shod. Of course they might get what was known as the "knee-tied splint," but as to the date of that he could not say. What often surprised him was that with trotting work, taking the hunters and hackneys, they got splints; with the Shires heavy breed of horses they seemed to get ringbones and sidebones. With reference to spavins, he did not know the probable date of these, but he often wished he could make a horse throw a bone spavin. As to scirrhous cord—what was a scirrhous cord? He was afraid he must look upon it as a cancer. He considered the majority of these schirrous cords dated from the time of castration. A man wanted to be accustomed to diagnose farcy buds. He considered that they were a great test for glanders. If one took a horse turned out to grass, one could see in 24 hours. In such a case he had said to people "That horse has glanders." He did not know whether putrid breath was always a sign of gangrene of the lungs. He did not think so. As to embolic lameness, he suggested that one mostly saw that in mares with foal. As regards corns, on that he thought he differed. The question was, was it a corn or a bind of the shoe? He said it was not. There was an old saying that once a corn it was always a corn. Was that so with an ordinary bind of the shoe? If they traced a corn and opened it, they found matter there. There was the bruising. It was entirely of a different nature to an ordinary bind of the foot. He could not agree with the

writers who said it was due wholly to the shoe. A bruise of the corn he considered was due to the contraction of the heel—buckling in. Wounds and sores they were often called in to. He thought if there were suppuration he should be inclined to say a man would be wrong in sending the horse out. In some horses they would see a kind of fibrous tumour all through the shoulders. They were continually rubbing, yet they did not suppurate. If there were any period of wet weather, when the saddles and collars began to get hard they would find these sores coming off. He thanked Mr. Hunting for his paper. He (the speaker) hoped he had come there to learn. The older he got the less he seemed to think he knew; and if Mr. Hunting had brought out anything with regard to these cases of prosecution or examining horses which would save them getting into trouble, he must say he thanked him very much.

Mr. HOWARD referred to the case of glanders ulcer developing rapidly, especially in the larynx and trachea. He had had an example of this a long time ago. Late one night he was called to a horse that was suffocating, down. When he got there the animal was so near death that he did not stop to make an examination of it, but simply put the tube in. It relieved it to a certain extent, but not completely. The horse was still roaring a little with the tube in. Next morning he went and examined the horse more carefully, and found he had got an ulcer on the Schneiderian membrane. He naturally thought it was a case of glanders. The horse died that day, and a post-mortem was made, the trachea being found ulcerated the entire length. It was rather a shock to him, because he thought if this horse had coughed over him while he was putting the tube in, he would have been fairly well impregnated with glanders bacilli. Fortunately nothing happened, but it showed that in these cases of roaring it was just as well to be careful that the horse was not coughing when the tube was being put in.

There was one aspect of the paper that had not been touched on much, and that was with regard to the periods of incubation in contagious diseases. There were a good many that were not very well determined yet—the exact limits of time it took bacteria to develop any particular disease. There was no doubt if they had a more exact knowledge of these times, it would help them in tracing the origin of infection, and assist in stamping them out. He thought it was rather an unfortunate expression of Mr. Upton's in speaking of scirrhous cord to use the adjective "cancerous" in connection with it. "Cancer" was a very vague term. It was a term that was very commonly used amongst the public, but scientifically speaking it was not a term at all.

Mr. UPTON: I mean it will recur.

Mr. HUNTING: Malignant tumour.

Mr. L. SAVOURNIN said he would like to say first of all that he regretted that last time he spoke on the matter without taking Professor Macqueen's advice, and thinking over it, otherwise he might have spoken more to the point. With regard to putrid breath, there appeared to his mind to be two distinct kinds of putrid pneumonia, one very sudden, another following breakdown as the result of long standing disease. He remembered when a student reading in *The Lancet* a series of clinical articles by a well known writer upon putrid pneumonia in a human subject. There he described it as being a very sudden, a very fatal, and a very rapid disease. There was no mention, if he remembered aright, of any chronic kind of putrid pneumonia. When one considers what a very delicate substance the structure of the lung is, how richly it is supplied with blood, and how easily it could be broken down, one could quite understand that putrid pneumonia might occur very rapidly. From what he could understand it was a rapid and fatal disease in the human subject, so that no doubt that form of putrid pneumonia must exist in horses.

The CHAIRMAN said there was one question he would like to ask Mr. Hunting in connection with roaring. Did he mean the ordinary roarer—a horse that one had to gallop for his wind to ascertain whether he was a roarer, or the horse that suddenly developed roaring in a few minutes as it were. He (the Chairman) had seen horses apparently all right in breathing in the morning, and at night they were roaring so that one could have heard them across Red Lion Square.

Mr. HUNTING: No, I was not including them.

Mr. KING said he would like to ask Mr. Hunting if he had ever noticed a horse roar in harness and not roar with a man on his back. He (Mr. King) had tested a horse some months ago. It was bought at Aldridge's, and it was said that it was a very bad roarer. They had it in harness, and they said it made a big noise. He said "get a man on his back," and they galloped the length of a long street for about twenty minutes, full-stretch gallop, and they could not make him emit a sound. He (the speaker) said "very well, now put him in harness" and they put him in harness, and after being driven some little time the horse did make a tremendous noise. The only thing he could attribute it to was that he bored slightly towards the near side. He would like to know what position a veterinary surgeon would be in who examined that horse and simply relied upon his gallop. With reference to roaring coming on suddenly, he quite agreed with Mr. Howard that a man might easily make a mistake. He had been called in to attend a horse, perhaps at night, and once or twice in the day time, when it had been suffering from acute laryngitis, discharging from the nostrils, and showing no symptoms whatever of glanders or farcy; in fact he never suspected such a thing. He had put a tube in that horse and, to his surprise, after about four or five days, he had found that it had been a very decided case of glanders. Mr. Howard said one should be careful as to putting a tube in a horse like that. He would like to know what remedy could be used when a horse was so far gone, and one must get a tube in to save his life—what measure could be used to determine whether he was glandered or not. One could not wait to test him with mallein, and therefore the tube must be put in.

The CHAIRMAN asked if a horse roared with temper. He had a mare he used to drive in harness, and he could guarantee to make her roar in harness. If he put her in the middle bar and put the whip across her back, they could hear her for a mile with temper. He did not remember that he had noticed it in a gelding, but he had two mares he could make roar any time he wanted.

Mr. HUNTING, in replying, said he thought they had got some facts together. Many of them had probably come across a case of corn lameness—where the horse had gone suddenly lame and matter was found at once in the foot. Mr. Butters had told them of a case which occurred in his own hands. Such a case he thought was valuable when they got it at first hand. Mr. Butters wanted to know how he should arrive at the opinion that navicular disease had been of long standing. Well, he confessed that he was not certain how to arrive at a diagnosis of navicular disease, to begin with. His (Mr. Hunting's) remark was that in his own experience he could speak to a very short period. A horse that had been sound yesterday, as far as action went, should go lame and never be sound again, and that lameness be due to navicular disease. Generally those cases arose suddenly after a long rest. As to contracted feet, he quite agreed with Mr. Butters that there were so many causes of contracted feet; it was so difficult to tell the artificially contracted foot from some naturally contracted feet, that when both feet were alike it was almost impossible to say how long the contraction might have existed. When one foot was contracted he thought he

might, at any rate, say that it was not a case that happened yesterday. Contraction of a foot from disease as far as his experience went, always required at any rate two or three months to establish it. It might be that a horse was lame from some other cause on the leg that had a contracted foot. In the case of a lawsuit it would be well for them to be able to say at any rate that that horse had had a contracted foot for many weeks—probably two or three months or more. At the end of his remarks Mr. Butters had said this was a subject for more than one man to write on or speak about. That was exactly the reason why he (Mr. Hunting) had brought the subject there. He himself recognised that no one man's experience was sufficient to answer many of these questions. Mr. Upton was always interesting, if for nothing else than his originality. That night he had surpassed himself. Certainly he (the speaker) was struck with his few opening sentences, which showed that he recognised the difficulty attending this subject; because he pointed out that many diseases were due to a hereditary cause, and therefore it was very difficult to say when they started. In the case of any disease which was hereditary, he took it that there was a tendency or something which was there long before there was any appearance of disease. However, they could not go into that. All they could speak of were conditions they could see or feel. With a ringbone as an example, that was an hereditary disease; Mr. Upton might probably say that a ringbone had to some extent or to some degree been there, if the animal was a four-year-old, for about four years. Well, that was a subtle argument, and one he did not intend to tackle. But the enlargement of the ringbone certainly gave them something to go upon. The size of a ringboue was some criterion as to its age. They had all met cases where they failed to diagnose why a horse was lame for months and months, and then, perhaps after six or eight or more months, they found a little enlargement which gradually increased round the coronet. Mr. Upton put back the duration of roaring in the same way by tracing it to lung trouble. He supposed he would say that although the roaring only occurred a month ago the lung trouble existed 12 months ago. That also was a little too subtle. What they had to consider was the noise that they heard, and not any primary cause. Mr. Upton ventured to differ from him on the question of shivering, he thought, to the extent that shivering was due to spinal injury. It was not for him (Mr. Hunting) to contradict him, for he did not know himself to what it was due. He did not even know whether it was cerebral or spinal. He had seen many different kinds of spinal injury show no symptoms of shivering, and in cases of shivering he had not seen or traced any connection with spinal injury. (Mr. Upton: I mean those that are called "chink-backed.") He did not call cases of "chink-back" shivering. He wanted a shivering of muscle before he called it shivering; the animal must either quiver his tail or a limb. He agreed with Mr. Upton that many contracted feet were due to shoeing. Mr. Upton seemed to have an exaggerated idea of the danger of a splint, especially in hunters. He had forgotten to mention speedy-cutting. This occurred without splints, as with them. He took it that an enlargement under the knee was a sign of speedy-cutting some time previously.

What was the earliest age at which melanosis had been known to occur in a horse? He did not know. His own experience of melanosis only included some half-dozen cases, and they were all in aged horses.

He was not a pathologist, or he would like to argue the question with Mr. Upton about the schirrhous cord being cancerous. What he wanted to get at, and what Mr. Upton did not tell them, was—how long after castration is it before there are any appearances of schirrous cord? Or to put it another way: If a horse has a scirrhous cord, and it is detected three years after it was castrated, is that traceable back to the castration. (Mr. Upton: Yes.) He was not prepared to say. But if all these cases were due to dyskomyces he thought one would be safe in saying that it was traceable back to the time of castration. But he himself had seen one case that he knew was in London working for four or five years and never had anything wrong with it until the last few months before he saw it. He agreed that in some cases they might fail with their operation. As a rule the removal of a scirrhous cord was a cure, but there were a few cases where the scirrhous extended up to the abdomen, and it was incurable. It was too late to argue the question of whether corns were due to shoeing or not, but he would express his own opinion that every corn was due to the shoe. Mr. Howard had related a case of glanders ulceration of the larynx, but seemed rather shy in admitting he had not diagnosed it and had put a tube in. He hoped he need not be, for he had done it himself. There was no other symptom of ulceration of the larynx except roaring, nor anything that would help or guide them. It was very remarkable how the wound in the trachea seemed to increase the rapidity and spread of the ulcerating process. It was an uncommon thing to find more than a few distinct and separate ulcers in the trachea, but in every case where tracheotomy was performed the whole surface had been ulcerated from top to bottom, always past the hole which had been made, and right up the pharynx. One word more about this tracheal ulceration. He had made many unqualified statements in his life, and had had to qualify them later on. He had argued that until a horse showed clinical signs of glanders he was not capable of infecting other horses. That required this qualification: tracheal ulceration existed more often than most of them were aware. He could not give the exact proportions, but he should think that in 15 per cent. of cases of glanders—not farcy by itself—they would find tracheal ulceration. And in some cases they would find tracheal ulceration as the only symptom on post-mortem excepting nodules in the lungs, *i.e.*, they would have tracheal ulceration without any laryngeal ulceration, without any glands swollen—and that opened up quite a new view. These horses with tracheal ulceration presented no particular symptoms of it. He had found it on post-mortem, after testing with mallein. These horses with only tracheal ulceration must be a danger to others, fortunately they were rare.

Mr. Savournin had referred to putrid pneumonia. Now he (Mr. Hunting) knew that putrid pneumonia occurred very rapidly. In an apparently healthy horse they might have putrid pneumonia and death within 24 hours. There ought to be a post-mortem examination to enable one to say how long it had existed. Although two pathologists, to whom he had submitted portions of gangrenous lung removed from horses that had died of putrid pneumonia, assured him that there was nothing in the lesion which could not have occurred within a few days, he ventured to doubt their statement, because when he had known a horse for three or four months or longer, he had never seen a case of putrid pneumonia unless it occurred in a horse that had previously suffered more or less from pneumonia. He believed that a case of putrid pneumonia only occurred in a horse with some injured or dead lung—probably weakened or injured lung the result of a previous inflammatory attack.

In reply to the President's question, he had recognised more than one case of roaring due to temper, and all in mares. Mr. King had referred to roaring in harness. He (Mr. Hunting) had met with a number of those cases, where a horse made a noise in harness and yet one might gallop him to any extent and he made no noise. One of the best illustrations was a horse that, to his horror made a noise in harness a few days after he had

passed it as sound. It only made this noise in harness. He said "It is not roaring; it may occur occasionally. Leave his bearing rein off and handle him quietly." That was only slightly palliative. But Mr. W. J. Smith suggested the use of an overhead check rein. It was a most perfect success, the horse had never made a noise since. He (the speaker) had come to the end of his notes, so that all he had to do was to thank them for their patience and their contributions to the debate.

On the proposal of Captain Butler, seconded by Mr. Stroud, a vote of thanks was passed to Mr. Hunting for his paper.

Mr. BUTTERS proposed a vote of thanks to Mr. Howard for exhibiting his unique and interesting specimens.

In seconding, Mr. Savournin said he had had two cases of fractured hips in cab horses. The horses came home very lame, and nothing was known, as usual. After a long waiting, in one case the horse had to be killed, and the fracture was found. He had not satisfied himself as to the proper method of diagnosing fractured hip. He wished to thank Mr. Howard.

The CHAIRMAN put the motion, and it was carried unanimously.

The meeting terminated with a vote of thanks to the Chairman.

A CONTRIBUTION TO THE DIAGNOSIS OF HEARTWATER IN CATTLE.

By Dr. THIELER, Government Veterinary Bacteriologist.

(Continued from p. 602).

HEARTWATER CASES IN CATTLE.

The tenour of this article being of an inductive character, the enumeration of some carefully observed experimental cases of heartwater may illustrate points more clearly.

Case I. Calf Heifer, Two Years Old.—An Africander heifer, about two years old, was injected on July 24th, 1903, with 10 c.c. blood intrajugular. The blood was taken from a goat, which contracted heartwater from Bont Tick infection. Sixteen days later the temperature began to rise, became normal again after six days, during which time there seemed to be nothing amiss with the animal. When the temperature however rose to 105·6 the heifer was bled, and the defibrinated blood was injected into a goat, a sheep, and a calf (abont 18 months old). The goat contracted the disease, so did the calf; its history is as follows:—

Case II. On the ninth day after inoculation (this period represents the incubation time) the temperature rose and was high for four days, when the animal, which was feeding all the time, showed visible symptoms of sickness. On the morning of that day the animal had distinct attacks of fits, there was a constant chewing movement of the lower jaw, just as if chewing the cud, and at the same time there was a constant nodding of the head, accompanied by extension and withdrawal of the tongne. A foamy saliva collected on the lips and the edges of the mouth, and dropped in long strings. The back of the animal was arched, the neck and head stretched out, the hind legs placed under the abdomen. When the animal was forced to move it did so with apparently stiff legs turned outside, and the walk was staggering, and it kept on moving until it dropped. It would then rise again, but all of a sudden intermittent spasms took place all over the body. These spasms may be produced by touching the animal' by forcing it to move, and by frightening it. I noticed them occurring as soon as a fly settled on the eyelids. Finally, the animal drops after most pitiful bellowing, struggling with the legs, with stretched out head. It was then killed.

Post-mortem was made directly after death. The condition of the animal was good. The blood was normal, so was the appearance of the beef. The lungs were in a slight dropsical condition (œdema of the lungs.) There was a little liquid in the heart-bag. The outside of the heart was diffusely studded with hæmorrhages, the lining of the left ventricle showed blood spots. The liver was normal, so was the gall bladder. The spleen was enlarged. Kidneys and urine were normal. The mucous membrane of the fourth stomach was thickened. The folds were swollen, the mucous membrane of the duodenum and all through the lengths of the smaller intestines and the colons were congested.

The microscopical examination of the blood gave negative results.

Case III.—Africander calf, about 18 months old, was injected with 20 c.c. undefibrinated blood of a goat which was suffering from heartwater. After an incubation time of six days the temperature began to rise, gradually ascending up to 106·8 in the evening of the 11th day. The day after the temperature dropped, and at that time very serious brain symptoms developed. The calf turned constantly around the pole on which it was tied up, at intervals it dropped, rose again, and constantly pushed forward; the head was extended straight out; constant chewing movements of the lower jaws were present, and saliva beaten to foam hung around the lips. The eyes were staring, the eyeballs were slightly protruding, and the blood vessels of the sclera were strongly congested. Finally, the calf dropped, not to get up again; fits set in all over the body; the head was extended, and convulsions followed. Death set in about eight hours after the first described symptom was noticed.

Post-mortem.—The condition of the animal was pretty good; rigor mortis was present. There was some liquid in the peritoneal cavity, and there were blood spots on the serosa of the intestines. The heart bag contained about 5 00 c.c. of a slightly red-tinged liquid. The blood was blackish, but well coagulated. There were blood spots on the lining of the left ventricle. The lungs were œdematous. The liver was of normal appearance. The gall bladder was contracted, and contained brown bile. The kidneys were strongly reddened in section, the spleen was slightly enlarged. The mucous membrane of the fonrth stomach was in a state of strong congestion, especially the fundus and pyloric parts; there were blood spots on different places. The mucosa of the duodenum were swollen, and bile stained. The mucosa of the smaller intestines had in the first parts a slate colour mixed with red patches and arborisation of the injected blood vessels; the membrane is slightly thickened. Towards the end the mucous membrane of this particular intestine was still more swollen, the congestion stronger pronounced, and the hæmorrhagic patches more numerous. The cæcum and colon were strongly congested. There was a distinct increase of liquid in the chambers of the brain and under the dura mater. Increased liquid was also found in the spinal cords. Microscopical examination gave negative results.

Case IV.—Africander calf, about two years old, was injected with 20 c.c. undefibrinated blood into the jugular vein of a goat which was suffering from heartwater. After an incubation time of 11 days the rise of temperature began; the fever lasted five days. On the last but one day the calf was noticed to be very ill. It stood with a drooping head, taking no notice of what is happening around him. On the morning of the last day the animal was lying with extended head. There was slight diarrhœa present.

Post-mortem was made about one hour after death. The condition of the cadaver was moderate. Rigor

mortis was present. The blood was well coagulated and of normal colour, so was also the beef. There was some yellow liquid (about 500 c.c.) in the pleural cavity. The lungs were strongly œdematous, the interlobular spaces distended. The heart-bag was filled with yellow liquid, and enormously extended. The liquid coagulated rapidly after blood was added to it. The heart-bag was infiltrated with the same liquid, and had a gelatinous structure. There were blood spots on the lining of the left ventricle. The liver was congested, it had rather a reddish glossy appearance. The gall-bladder was half-filled with normal bile. The spleen was normal, the kidneys were hyperæmic, and the urine was normal. The lymphatic glands of the mesentery were slightly enlarged. The fundus of the fourth stomach was deep red, with numerous blood spots. The mucous membrane was thickened, the folds standing prominently out. There was slight catarrhal condition of the duodenum; in the lower parts of the smaller intestines the swelling of the mucous membrane became very strong, the hyperæmic condition very pronounced, and numerous punctiform blood spots were present. In the cæcum, colon, and rectum was the congestion even more intense, and long red streaks were very marked. The whole picture called to mind similar conditions in Rinderpest, with the difference that the Peyer's patches were not attacked. The brain was slightly hyperanæmic, the dura mater was slightly infiltrated with liquid; there was also some liquid under the dura mater.

Analysis of the above Cases.

Out of the four animals which were inoculated with heartwater blood, and sickened, three died. Five other animals of about the same age were treated in a similar way, but did not contract any disease from the injection.

The symptoms during life and after death show a certain resemblance, both in heartwater of sheep and goats as well as in heartwater of cattle. The striking symptom which gave the disease the name was, however, not always present, and is in cattle never so well pronounced. On the other hand, the lesions found in the bowels are less marked in sheep and goats, but distinctly so in cattle; indeed, the inflammation in these organs may be so severe that one suggests rather another disease than heartwater. The cases above related were due to infection with virulent blood. Mr. Lounsbury, however, has also produced heartwater in calves by placing Bont nymphæ on them which had been feeding as larvæ on a sick goat; and by adults which had been feeding as nymphæ on sick cattle. The Cape experts also found that the lesions in the bowels are in cases of heartwater in cattle the most striking symptoms.

The disease is also transmissible back from sick cattle to sheep and goats, and, of course, from cattle to cattle, as has been already alluded to in the foregoing notes. In inoculating, however, sheep or goats with blood from sick cattle, one is struck that the typical lesions of heartwater are not always produced, as in cases of the disease brought on by ticks.

The Cape observers have noticed that, in the first instance, they found that the filling of the heart-bag with liquid was absent. I have observed the same also in one series of experiments, whereas in other cases the disease showed itself typically already in the first instance. There does not seem to exist any regularity as to the appearance or non-appeorance of heart-bag fluid.

It remains to be stated that heartwater due to tick infection runs a longer incubation time than when due to injection of virulent blood. It may average about 15 days.

Conclusions.

From the foregoing notes, we may draw the following conclusions:—

1. Heartwater of sheep and goats is transmissible by inoculation of virulent blood from sheep and goat to cattle.

2. This transmission takes place under natural conditions by means of infected nymphal or adult Bont Ticks.

3. Although the disease in sheep and goats, on the one hand, and cattle on the other, are one and the same, yet the symptoms vary somewhat in their severity.

4. The inoculation of virulent blood from sick cattle to sheep and goats is not always followed by typical heartwater lesions.

Differential Diagnosis.

The foregoing notes may indicate that the diagnosis of heartwater in cattle may be difficult, almost impossible. In practice, only such cases are reported as heartwater wnich show the heart-bag bursting full with liquid. I am not yet convinced that this symptom is always due to heartwater, seeing that we find it very frequently in cases of Rhodesian Tick Fever. We are entitled to believe that it may be present in still other diseases of which we have but little knowledge. The most striking symptom was the inflammation of the bowels, but here, again, other diseases, such as Rinderpest, Rhodesian Tick Fever, sometimes even ordinary Redwater, Gall-sickness due to vegetable poisoning, may produce the same effect. We may arrive at a diagnosis by exclusion of the different diseases, and be guided as follows:—

Heartwater is due to Bont Tick, therefore we find it only in such parts of the country where this tick exists; or in such cattle which have been removed out of a Bont Tick infected field within a period of 14 days to three weeks; secondly, the Transvaal cattle running in Tick Fever area have a good immunity against the disease, therefore such cattle may first contract it that have been freshly imported into an infected field.

Rinderpest may be easily excluded by its lesions in the mouth, and especially Peyer's patches. Rhodesian Tick Fever is excluded by microscopical investigations in the first instance, and by such typical lesions as are met with in the kidney. A still further indication is to ascertain whether within a year, or even longer, cases of heartwater have occurred in sheep or goats in places where the cattle have been running.

Finally, an inoculation into sheep or goats may be necessary where, after exclusion of all other diseases, we wish under all circumstances to know whether heartwater is present or not. This experiment has enabled us to diagnose the disease in cattle which were suffering both from Rhodesian Tick Fever and Heartwater. It must be taken into consideration here that goats or sheep infected may fail to show the liquid in the heart-bag.

I may allude here again to the fact that the symptoms detected during life were interpreted by farmers as being an indication of "Dronkgall-sickness." We find symptoms indicating a derangement of the brain in Redwater, Rhodesian Tick Fever, and Rinderpest, but still they differ, inasmuch as the animal shows more of an aggressive attitude, and charges men without provocation. There is but little doubt that the majority of cases of heartwater come under the name of Gall-sickness.

We may also state here that the popular observation of changing field, which is very often detrimental to cattle, may be explained as having some connection with the disease in question. It has been repeatedly observed that cattle, especially calves, which come from the High Veld to the lower field do sometimes die there of what is called Gall-sickness or Bush-sickness. Others do not thrive well. Again, cattle from the Orange River Colony and some parts of the Cape suffer particularly

from such diseases as are caused by change of field. Change of field is generally understood to mean change of grass, and the idea is that it is the difference of pasture which produces the disease.

We are also perfectly aware that outbreaks of ordinary redwater are traceable to the same change of field; indeed, here the conditions are very similar. It is the removal of cattle from non-infected to infected fields. The change of pasture, although the difference of grass may have an influence, probably plays only a subordinate *rôle*.

An experience made with cattle belonging to the Rinderpest Station furnishes a good illustration of this, and at the same time may serve as a guide how as to arrive at a diagnosis.

The Rinderpest Station, Pretoria, used to import several lots of cattle from the Cape Colony, especially from the northern districts, where redwater or heartwater are unknown. During the course of immunisation against rinderpest such cattle became also immunised against ordinary redwater, this being a natural result of injection of blood from animals which are salted against ordinary redwater. The cattle were kept on the station tied up, and did well as long as they were under these conditions. It was found advisable, however, to move them to a farm behind the Magaliesberg, where good pasture was obtainable. The result was that about three weeks after removal some of the cattle which came from the Cape began to die, whereas none of the Transvaal cattle collected locally died. The first and natural explanation of this mortality was change of field. Indeed, a good many cattle became very poor, and died of poverty. But some well-conditioned oxen died under rather alarming symptoms, which indicated that a specific disease must have been at the bottom of the trouble. The narration of two typical cases may be convincing that the disease was the same which has been described before, and which was due to the infection with blood from goats suffering unmistakably from heartwater.

One Cape ox, 2½ years old, was hyper-immunised against rinderpest, arrived three days ago frcm Wonderboom, where he had been for some weeks. He was noticed to be ill since about two days, when he got suddenly bad, and could not get up any more. He showed spasms of the head, of the neck, and the front legs. Diarrhœa was present. He died during the night.

Post-mortem was made early in the morning. Condition was good. Rigor mortis was present. The beef had a normal colour; the blood was partially not coagulated. There was a yellow liquid in the peritoneal cavity. The lungs were slightly œdematous, so were the mediastinal lymphatic glands. The heart-bag contained a considerable amount of yellow liquid, which had rather a brownish tinge. The outside of the heart had a brick-red colour, and big red, blackish hæmorrhagic spots were on the left endocard. The liver was enlarged, contained much blood. The walls of the bile bladder were thickened, and there was but little bile. The spleen was slightly congested, its pulpa softened. Both kidneys were deep red; the urine was normal.

The mucous membrane of the fourth stomach was much swollen, particularly in the folds, which were as thick as a finger. The pyloric-part was reddened. The mucosa of the duodenum was bile-stained, that of the small intestines was reddened, the blood vessels strongly injected; the contents of the bowels were of a brownreddish colour. The lower part of the intestines were covered with mucus; there was a slate-grey discolouration present. Peyer's patches were normal. The mucous membrane of the cœcum and colon was thickened; there were grey and red patches; there were also red streaks in the rectum. The brain was strongly congested. Microscopical examination of blood from the heart, liver, and spleen proved the absence of pyroplasmas of any description.

8/6/03.—Cape ox, about 3½ years old. Same history as previous case. Was noticed to be ill since about a day, showing nervous symptoms, such as spasms of the head, extension and withdrawal of the tongue, biting the ground, staring look; when he finally dropped he kept moving his legs in a trotting action.

Post-mortem was made about 1½ hours after death. The condition was fair. Rigor mortis was not yet present; the blood was not yet coagulated. The beef had a normal colour. There was some liquid in the peritoneal cavity. The lungs were normal. The heart-bag was empty; the left ventricle showed blood spots. The liver was congested; the gall-bladder was thickened; the bile was viscid. The spleen was normal, so were the kidneys and urine. The outside of the bowels was infiltrated with yellow liquid. The third stomach was somewhat dry. The fourth stomach had a swollen mucous membrane, the folds were very thick, the mucous membrane was uniformly reddened, and there were numerous hæmorrhagic spots. The mucous lining of all the small intestines was generally congested and studded with fine blood spots. Colon and cæcum were swollen, and on the mucosa were long hæmorrhagic streaks, which extended into the rectum. The anus was deep red. Microscopical examination proved the absence of any blood parasites.

The diagnosis of the two cases was somewhat doubtful, and could only be arrived at *per exclusionem*.

Rinderpest, Redwater, of any form, had to be excluded. Vegetable poisoning was thought of, but had to be excluded too; there was no poison present at that particular time, and if it had been, then Transvaal cattle, which were kept under the same conditions, would also have sickened, which they did not. There remained the diagnosis of Gall-sickness, which, as repeatedly has been pointed out, is a very vague term, and may mean anything or nothing. However, an examination of the skin of the cattle proved the presence of Bont Tick, and as engorged Bont Tick females were repeatedly found, there existed but little doubt that the tick was breeding on the farm. Morevover, sometime previously sheep died on the place. Finally, the the farm lies in the Heartwater belt.

This circumstantial evidence taken into consideration, and the symptoms compared with those of the experimental cases, leaves but little doubt that this form of Gall-sickness, of which only Cape cattle recently imported died, was heartwater.

Unfortunately, the actual proof, namely, that of experimentally producing the disease in sheep or goats was lacking, but from a practical point of view the necessary evidence for a deductive diagnosis was present. —*Transvaal Agricultural Journal.*

REGISTRATION OF STALLIONS.

The scheme adopted December 11th, 1903, by the Devon County Agricultural Association for the voluntary Registration of Stallions, comes into operation in April. The Devon County Agricultural Association has decided to undertake the registration of all stallions, whose owners so wish, provided that the following conditions are fulfilled:

(1) The stallions must be pure bred, that is of some distinct breed such as Shire, Clydesdale, Hackney, Thoroughbred, Hunters Improvement Society Sires, Polo Pony Sires, Exmoor, Dartmoor, Welsh, Shetland, etc.

(2) The stallions must be passed by a Professor from the Royal Veterinary College as free from hereditary unsoundness.

(3) A fee of half-a-guinea will be charged for each stallion examined.

(4) Stallions which are bought at the Spring Shows at Islington need not be examined again if their owners

produce certificates from the Secretary of the Show that their horses were passed sound.

(5) The owner of a stallion which has served during the preceding year must prove that his stallion is fruitful by producing a certificate to that effect signed by six landowners or farmers.

(6) Stallions which fulfil these qualifications may be placed on the County Register on payment of half-a-guinea, and on sending to the Honorary Secretary a description of the stallion, together with his route and fees.

(7) Stallions will remain on the County Register till the last day of December of the same year.

The Register will contain a list of the rules, the names and addresses of all owners of registered stallions (these names will be arranged alphabetically), the names, description, list of winnings, route, and fees of all stallions; in fact it will be a useful guide to all breeders and an excellent advertisement to stallion owners. This book will be offered for sale to the public.

A similar scheme to this has been in working at Holsworthy since 1900. The result has been that stallion owners have done so well with those which were registered that they have gradually ceased keeping unsound horses. In 1900, out of 12 stallions examined, only four were sound. Each year since there has been a decrease in the proportion of unsound horses, and this year, 1903, there were 15 sound stallions on the Holsworthy Register, and five on the Torrington Register which was started in 1902. There are thus 20 registered stallions, including Thoroughbreds, Shires, and Hackney serving in N.W. Devon.

The first thing to be done is to find out how many stallions in each district are likely to be presented for examination, and at which town. The Honorary Secretary to the Registration Committee to the County Agricultural Association is requesting the Secretaries of the various local Agricultural Associations to kindly communicate with all owners of stallions in their districts with a view of obtaining this information. In order to give breeders as wide a choice in the mating of their mares as possible, owners of stallions may be invited to send their horses to be examined at any of the twelve towns selected, although the stallions may not happen to stand in Devonshire, and these stallions will be eligible to be placed on the County Register on the conditions named. Where local agricultural associations give prizes to stallions, a great inducement to Register would be added if they restricted these classes to stallions on the County Register; if they so wish to those of them only which stand or travel in their show area. This would seem a reasonable restriction, as there is no object in giving a prize to an unregistered stallion, when his owner might register him if he is qualified. For unless he is qualified he cannot be a desirable horse to use. At Holsworthy the stallions are judged on the day they are examined (early in April). This plan assists the Secretary in collecting the stallions, and the owners value the prizes the more for being awarded at the commencement of their season of service. To prevent the local show from suffering, the money is not paid unless the winner parades at the show at Holsworthy in June.

In a rider to the report the Devon County Agricultural Association has added a few suggestions, based on the experience gained in those districts where Registration has been tried. A Register of mares was started at Holsworthy in 1900, and adopted at Torrington in 1902. It has been welcomed by breeders to the extent that there are now about 235 mares on these Registers. With registered stallions and registered mares it is obviously undesirable to encourage breeding on any other lines, and these local societies therefore very wisely, year by year, substitute for the old district classes new classes for registered mares served by registered horses; and there are also classes for yearlings and two-year olds, the progeny of registered parents. It is proposed to hold an auction at Holsworthy in the spring for such progeny, and since the fact of their sires and dams being registered is a guarantee that they are unlikely to have inherited any unsoundness, it is believed that breeders will obtain an enhanced price at this sale.

The whole question of the registration of mares is, of course, one about which local agricultural societies are likely to have different opinions, but those which have given it a trial are decidedly pleased with the result, and have found it very little trouble to manage. Since the County Agricultural Association has now undertaken the registration of stallions, a great opportunity is presented to local societies to encourage the breeding of sound stock; and since it is hoped that some at least will start a register for their mares, the following notes are added, suggesting a simple way to do this:

The leading veterinary surgeon at each market town in the district should be appointed to examine mares at his town. A fixed fee should be settled for which he would examine all mares brought to him. The dates of examination should be the market days at his town during February and March. The owner of the mare could select to which market town he would send her. But the one examination should be final for that year. Mares under five years old should be examined each year, as hereditary diseases often do not show till that age. Mares of five years and upwards might remain on the local register for three years without re-examination. A register should be kept, giving name of owner, address, etc., together with name, age, and description of mare; and it is also desirable to keep a list of foals, the progeny of such mares and of stallions on the County Register, as a useful reference to buyers. A fee of 5s. for each mare examined would be found ample to cover all expenses of such a register, including veterinary fees; and since the majority of mares, being five years old and upwards, would only be examined every three years, the fee is not a heavy one, and would readily be paid, since it would make mares eligible for the breeding classes at the local shows, as suggested above.

There is no need of any qualification for mares, except that of freedom from hereditary disease. Provided they pass the veterinary examination, mares of any breed and size might be admitted to the register. The veterinary surgeons should be furnished with the same list of diseases which the Royal College of Veterinary Surgeons considers as hereditary, and any mare should be passed which does not suffer from any such disease. If the owners of mares will only mate them with registered stallions, stallion owners will find that it is not profitable to introduce horses to the district which are unsound; but if stallion owners are to go to the expense of buying sound good horses, the owners of mares must be prepared to pay a reasonable fee for the services of such stallions, and to recoup themselves they must aim at producing more valuable foals, by only breeding from mares good enough and young enough to produce good stock. If breeders will do this, and give their young stock the food necessary for their growth and development, better results will undoubtedly be obtained. But the old system of choosing a stallion because his fee is low, and selecting a mare because she is too old or unsound to be of any other use, can only result in disappointment and loss.

The Devon County Agricultural Association has appointed a Committee to carry out the details of the scheme for registration of stallions. The Honorary Secretary is Mr. J. F. Bowden, Bedford Chambers, Exeter, who is sending a circular letter to the Secretaries of each local agricultural society, requesting their kind assistance in carrying out this scheme, and also to gentlemen in their districts who are interested in horse breeding.

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5. In spite of this, however, it will be seen, as in the case of two rabbits which received repeated doses of both anthrax and Gaertner bacilli in increasing quantities, that immunity may be conferred against very large doses of pure anthrax bacilli.

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Mr. J. M'LAUCHLAN YOUNG, lecturer on veterinary hygiene in Aberdeen University, has been appointed veterinary surgeon for the city under the Public Health (Scotland) Act at a salary of £75 per annum.

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BAXTER.—On the 12th March at Downington House, Lechlade, Glos., The wife of John Richmond Baxter, M.R.C.V.S., of a son.

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EQUINE INFLUENZA.

Sir,

It is with very great pleasure that I have read the paper upon the above subject, contributed by my friend Mr. Henry Gray, M.R.C.V.S., at a recent meeting of the Eastern Counties V.M.A. It is, in my opinion, one of the best articles both from a scientific and practical point of view, that has appeared in your colums for a long time, and ought at the next meeting to produced a very interesting discussion.

As to the various phases assumed by this disease I have had a very well defined illustration during the past fort-

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No. 5 commenced on 15th, with loss of appetite, temp. 105 F., swelling and soreness of sub-maxillary glands, and has developed a typical case of strangles, the abscess breaking yesterday.

I have as nearly as possible presented each case with a full account of the attendant symptoms, and I must say that in my experience I have never known five cases *in one stable* and at *one time* so markedly dissimilar in character, although I have had to deal with large outbreaks in pit stables from time to time. The whole of the animals have recovered or are doing so. It was in my father's practice that Mr. Gray was assistant in the "eighties," and during that time he saw several outbreaks in coal pits.

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JNO. R. GREEN, F.R.C.V.S.

Welbeck Hotel Yard, Nottingham.

"PUERPERAL TOXÆMIA."

Sir,

In your issue of last week you give your *imprimatur* of approval by prominence of position, and boldness of type, to an article on the above subject by "Luna," Meerut, in which he discusses the nomenclature of "Milk Fever," and arrives at the, to himself, and probably also, I may say, to yourself, Mr. Editor, and many others, satisfactory conclusion that "Puerperal Toxæmia" is the most appropriate scientific term that can be applied to this disease.

Now, Mr. Editor, I beg to differ with him, and with your permission I will give you my reasons for doing so, as I think that next to the Professors of our Colleges, and the Editors of our text books. Editors of current veterinary periodicals have most power to influence the scientific nomenclature of those diseases with which we are called upon to deal. But nevertheless, the most remote and obscure veterinary practitioner may, if he cares to take the trouble to do so, make suggestions, and if acceptable, these may, from their own innate cogency and aptitude, hold the field against all comers. The pathology and nomenclature of this disease has been a fruitful source of discussion ever since I can remember, and I am old enough to remember when the term "Milk Fever" had a very real reference to the etiology of the disease as at that time described and understood, in spite of the dictum of your correspondent that "there is no meaning in the term or name Milk Fever," and that "it is wrong from all points of nomenclature of diseases." I am not, however, going to contend for the retention of the name, as the theory of its causes and origin has undergone considerable modification since the time referred to. I am quite prepared to admit that it is time that we had fixed upon a more suitable scientific name than the one by which it has been known in the past, so far as the profession is concerned, though I can hardly think it worth our while to try to change the name by which it is universally known throughout the industrial world. Better be content to accept what use and wont has provided for us, trusting to time and providence to rectify any mistake that may have been committed in this way, so far as the outside world is concerned.

[Interruption here. Whirr—r—r—r goes the telephone bell. "Please come to S—— to see a cow that calved this morning and is down and suspected of milk fever." The hour is nine p.m, the place is 10 miles distant, and the case is urgent, so this letter must needs be delayed till a more convenient season, as the calls of nature to the arms of Morpheus will have become imperative, after the dutiful observance of the rites of St. Schmidt, ere I can possibly return, beyond "the witching hour of night."]

But for such a purpose as this, what better or more appropriate name than the above could be substituted? Certain am I, that no practising veterinary surgeon could, or would wish, a better. Therefore we may safely conclude that any desired change in this respect applies strictly to the name by which the disease is known amongst professional men, with whom the desire is to describe the disease more accurately in whatever name may be adopted.

Having relegated the obsolete term of "milk fever" to its proper place in our nomenclature, let us now consider what is to be regarded as more appropriate in the light of our present day information of the pathology of this disease. With the adoption of the word "toxæmia" I think I may be safe to assume almost universal concurrence. But there are an infinite variety of causes giving rise to this general condition, and it becomes necessary to qualify it with a prefix imparting to it a more specific character. Hence we have the words most frequently used to designate this disease by scientific veterinarians, and which I observe is the adopted of your correspondent "Luna," viz., "puerperal toxæmia," or as an alternative "puerperal coma." With the suitability of the terminal word in either case I am quite at one with your correspondent "Luna," and whichever of the two may be adopted leaves I think very little room for cavil. The former I prefer, because it describes the general state or condition of the animal system, and involves to a greater or less extent coma, which latter, in itself refers more directly to the presence of one of the most prominent symptoms of toxæmia.

Now to consider the most suitable prefix to be associated with the word "toxæmia." To the use of the word "puerperal" as applied to our patients I entirely object. As applied to the case of the human subject its suitability is all corrects, as the first syllable indicates, if my etymology be correct, the birth of a boy, which in our case makes its application ridiculous. I should therefore, I venture to affirm, be discarded. The term "vacal toxæmia" might with considerable cogency be applied, as indicating the cow as being the subject of more than nine-tenths of our cases, but as isolated cases of this disease occur in swine, bitches, and other animals, I think this also unsuitable.

In my opinion there remains only two other words that may with about equal propriety and about equal freedom from objection, be applied to this purpose, these being "maternal toxæmia" and "parturient toxæmia." Of the two I prefer the former, as it involves the latter, and indicates the subject; while the latter refers only to a particular state of being, and does not with any degree of certainty indicate the subject. It requires no great stretch of the imagination to conceive of the product of a parturition, whatever the young animal may be, being subject to a toxic action, that might have special reference to its birth, and involve it only within a few days of its homecoming. Hence my preference for the title "maternal toxæmia" which I consider most suitable, and least open to objection.

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With these remarks I leave this subject with the utmost confidence in the hands of those of my professional brethren who have given it their special attention and study, and I

do not doubt that such a name will be found as will at once satisfy all our scientific requirements and professional wants. If the foregoing remarks should by any possibilty have advanced the controversy by ever so small a step, point, or degree, the writer will consider himself amply rewarded. There is much or little in a name, according to the standpoint from which we regard it, but all new names ought to be coined with due regard to conveying the greatest amount of well defined information in the tersest of possible terms.

After reviewing the communication of your correspondent "Luna" in a far from unfriendly spirit, I am tempted to sign myself "Sol" to keep up the association, but as you might, perhaps not altogether without reason, be tempted to characterise such an act as egotistical, if I were to take the name of the greater luminary, I refrain, and content myself with the humbler but useful *nom de plume* of my usual every day signature. A. S. V. S.

COMMUNICATIONS, BOOKS AND PAPERS RECEIVED.—Messrs. H. C. Wilkie, J. L. Barling, A. Spreull, M. Turner, J. R. Green, J. Rostron. Lieut. A. S. Head. G. M.

American Veterinary Review (March), *Le Bulletin Vétérinaire*, (Mar. 15), *La Maréchalerie Française*, *The North British Agriculturist*, *The Agricultural Journal* (Cape), *The Farmers' Gazette* (Dublin), *The Scottish Farmer*, *World's Fair Bulletin*, *The Live Stock Journal*, *The Birmingham Daily Mail*, *Birmingham News*, *The Standard*, *The Birmingham Daily Post*, *The Liverpool Courier*, *The Dundee Advertiser*.

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Alterations for this list must be duly notified by the Secretaries

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